

# **Analysis of Phenolic Constituents As An Alternative Tool To Assess Authenticity and Geographical Traceability of Olive Oils**

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Authentication of olive oil is a global market requirement from both commercial and health perspectives, since adulteration of virgin olive oils (both by cheaper seed oils and by refined olive and pomace oils, as well as their being marketed with mislabeling and with misleading origin designations) is a serious and frequent trade fraud. Furthermore, precious antioxidative phenolic components (polyphenols and polyphenolcarboxylic acids) known to be present in virgin olive oils and not in other seed oils are lost significantly during alkali refining. Thus it was hypothesized that virgin olive oils could be authenticated by their phenolic profiles, which also had the potential to bear some indication of their geographical origin.

To test the validity and scope of this hypothesis, samples of virgin, refined and blended olive oils were obtained from a reliable Turkish olive oil producing plant and their extracts were first analyzed for total phenolic contents by Folin-Ciocalteu method. Later, the respective antioxidant and radical scavenging activities of the sample extracts were determined by ABTS and DPPH methods. Finally their phenolic profiles were determined by HPLC.

The presentation will include a comparison of our findings with respective literature values from other Mediterranean olive oil producing countries, as well as an overview of the literature on other current analytical solutions proposed for detecting olive oil adulterations, also attempting to summarize the sophisticated official analytical scheme and decision tree foreseen in the respective EU legislation.